

PhD Course in

**Earth Science, Fluid Mechanics and Mathematics
Interactions and Methods**



Seminar Series 2019

October 3rd, 2019, 14.00-15.00

Department of Mathematics and Geosciences

Aula C, Palazzina C, Via Weiss, 1

**“Thermal history of the Earth, plate motion, mantle convection,
plume tectonics in the early Earth”**

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Abstract

There is good evidence that the Earth’s mantle has cooled by 50° C per Ga during the past 4.56 Ga. What was the effect of warmer mantle temperatures in the early Earth? We begin by describing the most recent geophysical images of the Earth’s interior. These images show some subducting slabs descending into the lower mantle, thus supporting whole mantle convection. However, other slabs stalled in the mantle transition zone (410-660 km depth), a kind of two-layer mantle convection. Likewise, some hot spots are underlain by mantle plume that originate at the core-mantle boundary, while other plume have a shallow origin. This talk summarizes current data and models regarding convection in the Earth over the past 4.5 Ga.